

CLAIM AMENDMENTS

Claim Amendment Summary

Claims pending

- At time of the Action: Claims 1, 3-9, 11-41.
- After this Response: Claims 1, 4-9, 12-24, 26-28, 35-41.

Canceled or Withdrawn claims: 2, 3, 10, 11, 25, 29-34.

Amended claims: 1, 4-6, 9, 12, 14, 18-22, 24, 26-28, 35, 38, and 39.

New claims: none.

Claims:

1. **(CURRENTLY AMENDED)** A method for concealing data within a digital signal, the method comprising:

receiving a first data pattern of discrete values and a second data pattern of discrete values;

imposing a discrete value of the second data pattern over one or more values of the first data pattern, wherein the imposing is carried out by performing a Boolean operation with a discrete value of the second data pattern and multiple discrete values of the first data pattern;

encoding a third data pattern into the digital signal, wherein such third data pattern is the result of the imposing.

1 2. (CANCELED)

3 3. (CANCELED)

4
5 4. (CURRENTLY AMENDED) A method as recited in claim 1, wherein
6 the Boolean operation is XOR ~~imposing comprises the XORing a discrete value of~~
7 ~~the second data pattern with one or more values of the first data pattern.~~

8
9 5. (CURRENTLY AMENDED) A method as recited in claim 1, wherein
10 a pattern of discrete values may be encoded into the digital signal in one of
11 multiple discrete states;
12 the imposing comprises encoding ~~one or more~~ multiple values of the first
13 data pattern into the digital signal into a state that indicates a single discrete value
14 of the second data pattern.

15
16 6. (CURRENTLY AMENDED) A method as recited in claim 1, wherein
17 the digital signal is selected from a group consisting of a digital audio signal, a
18 digital video signal, a digital image signal, and a digital multimedia signal.

19
20 7. (ORIGINAL) A method as recited in claim 1, wherein the first data
21 pattern is a watermark.

22
23 8. (PREVIOUSLY PRESENTED) A computer having a computer-
24 readable medium as recited in claim 18.

1 **9. (CURRENTLY AMENDED)** A method for revealing a covert data
2 pattern of discrete values from an encoded data pattern of discrete values in a
3 digital signal, the method comprising:

4 receiving a digital signal, the signal having ~~an~~ a watermark encoded therein,
5 the watermark being an encoded data pattern of discrete values is encoded into the
6 signal in one of multiple discrete states, the encoded data pattern representing
7 multiple data patterns comprising an original watermark data pattern and a covert
8 data pattern;

9 extracting a discrete value of the covert data pattern from a plurality of
10 values of the encoded data pattern, wherein the extracting is carried out decoding a
11 single discrete value of the covert data pattern from the digital signal based upon a
12 state of a multiple discrete values of the encoded data pattern.

13
14 **10. (CANCELED)**

15
16 **11. (CANCELED)**

17
18 **12. (CURRENTLY AMENDED)** A method as recited in claim 9, wherein
19 the digital signal is selected from a group consisting of a digital audio signal, a
20 digital video signal, a digital image signal, and a digital multimedia signal.

21
22 **13. (PREVIOUSLY PRESENTED)** A computer having a computer-
23 readable medium as recited in claim 19.
24
25

1 **14. (CURRENTLY AMENDED)** A method for encoding a watermark with
2 a covert message into a digital audio signal, wherein binary bits of the watermark
3 may be encoded into the signal in multiple states, the method comprising encoding
4 multiple bits of the watermark into the digital signal into a state that indicates a
5 single discrete value of the covert message.

6
7 **15. (ORIGINAL)** A method as recited in claim 14, wherein the multiple
8 states are positive or negative modifications to magnitudes of one or more
9 subbands in the frequency spectrum of a sample of the signal.

10
11 **16. (CURRENTLY AMENDED)** A method for imposing a covert message
12 into a watermark, the method comprising:

13 generating multiple watermarks;

14 assigning each of the multiple watermarks to each of the possible discrete
15 values for at least a portion of the covert message;

16 selecting a watermark that corresponds to an actual discrete value of at least
17 a specific portion of the covert message;

18 without encoding any portion of the covert message itself into a digital
19 signal, encoding the selected watermark into the digital signal.

20
21 **17. (PREVIOUSLY PRESENTED)** A method as recited in claim 16,
22 wherein

23 size of all portions of the covert message is N bits long;

24 number of the multiple watermarks is 2^N .

1 **18. (CURRENTLY AMENDED)** A computer-readable medium having
2 computer-executable instructions that, when executed by a computer, perform a
3 method for concealing data within a digital signal, the method comprising:

4 receiving a first data pattern of discrete values and a second data pattern of
5 discrete values;

6 imposing a discrete value of the second data pattern over one or more
7 values of the first data pattern, wherein the imposing is carried out by performing
8 a Boolean operation with a discrete value of the second data pattern and multiple
9 discrete values of the first data pattern;

10 encoding a third data pattern into the digital signal, wherein such third data
11 pattern is the result of the imposing.

12
13
14
15
16
17
18
19
20
21
22
23
24
25

421 West Riverside, Suite 500
Spokane, WA 99201
P: 509.324-9256
F: 509.323-8979
www.lee&hayes.com

lee & hayes

1 19. (CURRENTLY AMENDED) A computer-readable medium having
2 computer-executable instructions that, when executed by a computer, perform a
3 method for revealing a covert data pattern of discrete values from an encoded data
4 pattern of discrete values in a digital signal, the method comprising:

5 receiving a digital signal, the signal having ~~an~~ a watermark encoded therein,
6 the watermark being an encoded data pattern of discrete values is encoded into the
7 signal in one of multiple discrete states, the encoded data pattern representing
8 multiple data patterns comprising an original watermark data pattern and a covert
9 data pattern;

10 extracting a discrete value of the covert data pattern from a plurality of
11 values of the encoded data pattern, wherein the extracting is carried out decoding a
12 single discrete value of the covert data pattern from the digital signal based upon a
13 state of a multiple discrete values of the encoded data pattern.
14
15
16
17
18
19
20
21
22
23
24
25

1 20. (CURRENTLY AMENDED) An apparatus comprising:

2 a processor;

3 a covert-channel-encoder executable on the processor to:

4 receive a first data pattern of discrete values and a second data
5 pattern of discrete values;

6 impose a discrete value of the second data pattern over one or more
7 values of the first data pattern, wherein the imposition is carried out by
8 performing a Boolean operation with a discrete value of the second data
9 pattern and multiple discrete values of the first data pattern;

10 encode a third data pattern into a digital signal, which third data
11 pattern is based upon the result of the imposing.

12
13
14
15
16
17
18
19
421 West Riverside, Suite 500
Spokane, WA 99201
P: 509.324-9256
F: 509.323-8979
www.lee&hayes.com

20
21
22
23
24
25
lee & hayes

1 21. (CURRENTLY AMENDED) An apparatus comprising:

2 a processor;

3 a covert-channel-decoder executable on the processor to:

4 receive a digital signal, the signal having ~~an~~ a watermark encoded
5 therein, the watermark being an encoded data pattern of discrete values is
6 encoded into the signal in one of multiple discrete states, the encoded data
7 pattern representing multiple data patterns comprising an original
8 watermark data pattern and a covert data pattern;

9 extract a discrete value of the covert data pattern from a plurality of
10 values of the encoded data pattern, wherein the extraction is carried out
11 decoding a single discrete value of the covert data pattern from the digital
12 signal based upon a state of a multiple discrete values of the encoded data
13 pattern.

14
15 22. (CURRENTLY AMENDED) A data encoding system for concealing
16 data within a digital signal, the system comprising:

17 a receiver for receiving a first data pattern of discrete values and a second
18 data pattern of discrete values;

19 an imposer coupled to such receiver, the imposer for imposing a discrete
20 value of the second data pattern over one or more values of the first data pattern,
21 wherein the imposer carries out its imposing by performing a Boolean operation
22 with a discrete value of the second data pattern and multiple discrete values of the
23 first data pattern;

24 an encoder coupled to the receiver and the imposer, the encoder for
25 inserting within the digital signal one or more values of a third data pattern which

1 are results of the imposer's imposing a discrete value of the second data pattern
2 over one or more values of the first data pattern.

3
4 **23. (PREVIOUSLY PRESENTED)** An operating system embodied on
5 a computer-readable medium having at least one program module comprising an
6 encoding system as recited in claim 22.

7
8 **24. (PREVIOUSLY PRESENTED)** A marked signal embodied on a
9 computer-readable medium, the marked signal having an encoded data channel
10 therein, wherein such encoded data channel has a covert data channel imposed
11 therein, the marked signal generated in accordance with the following acts:

12 receiving an original watermark data pattern of discrete values and a covert
13 data pattern of discrete values;

14 imposing a discrete value of the covert data pattern over one or more values
15 of the original watermark data pattern, wherein the imposing carries out its
16 imposing by performing a Boolean operation with a discrete value of the covert
17 data pattern and multiple discrete values of the watermark data pattern;

18 encoding results of the imposing within an unmarked signal to produce the
19 marked signal.

20
21 **25. (CANCELED)**
22
23
24
25

1 26. (CURRENTLY AMENDED) A marked signal as recited in claim 24,
2 wherein the Boolean operation is XOR ~~imposing comprises the XORing a discrete~~
3 ~~value of the second data pattern with one or more values of the first data pattern.~~

4
5 27. (CURRENTLY AMENDED) A marked signal as recited in claim 24,
6 wherein

7 a pattern of discrete values may be encoded into the signal in one of
8 multiple discrete states;

9 the imposing comprises encoding ~~one or more~~ multiple values of the ~~first~~
10 watermark data pattern into the digital signal into a state that indicates a single
11 discrete value of the ~~second~~ covert data pattern.

12
13 28. (CURRENTLY AMENDED) A marked signal as recited in claim 24,
14 wherein the marked signal is selected from a group consisting of a digital audio
15 signal, a digital video signal, a digital image signal, and a digital multimedia
16 signal.

17
18 29. (CANCELED)

19
20 30. (CANCELED)

21
22 31. (CANCELED)

23
24 32. (CANCELED)

1 **33. (CANCELED)**

2
3 **34. (CANCELED)**

4
5 **35. (CURRENTLY AMENDED)** A method for concealing data
6 within a digital signal, the method comprising:

7 receiving a first data pattern of discrete values and a second data pattern of
8 discrete values;

9 imposing a single discrete value of the second data pattern on a plurality of
10 values of the first data pattern, wherein the imposing encodes a third data pattern
11 into the digital signal.

12
13 **36. (PREVIOUSLY ADDED)** A method as recited in claim 35,
14 wherein the imposing comprises performing a Boolean operation with a discrete
15 value of the second data pattern and a plurality of values of the first data pattern.

16
17 **37. (PREVIOUSLY ADDED)** A method as recited in claim 35,
18 wherein the imposing comprises XORing a discrete value of the second data
19 pattern with a plurality of values of the first data pattern.

1 **38. (CURRENTLY AMENDED)** A method as recited in claim 35,

2 wherein

3 a pattern of discrete values may be encoded into the digital signal in one of
4 multiple discrete states;

5 the imposing comprises encoding a plurality of values of the first data
6 pattern into the digital signal into a state that indicates a single discrete value of
7 the second data pattern.

8
9 **39. (CURRENTLY AMENDED)** A method as recited in claim 35,

10 wherein the digital signal is selected from a group consisting of a digital audio
11 signal, a digital video signal, a digital image signal, and a digital multimedia
12 signal.

13
14 **40. (PREVIOUSLY ADDED)** A method as recited in claim 35,

15 wherein the first data pattern is a watermark.

16
17 **41. (PREVIOUSLY ADDED)** A computer-readable medium

18 having computer-executable instructions that, when executed by a computer,
19 performs the method as recited in claim 35.

421 West Riverside, Suite 500
Spokane, WA 99201
P: 509.324-9256
F: 509.323-8979
www.lee&hayes.com

lee & hayes